

RECORD

Length 35

Collection and Field Note Book

No. 35

(July 15, 1952 - Aug. 18, 1952)

(34497 -- 34608)

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Book 35

begin with

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Leave all margin notes
readings subtracted
0.5" from next below
one day off.

July 17 - 8-9 p.m. flying ^{high}
at 8000', westward from
San Francisco.

Sky above cloudless.
Flying over a continuous ^{all}
^{5000'} ~~and~~ blanket of cloud lying ^{up}
at ~~6000~~ thousand feet. ^{to,}
The upper surface is ^{up}
level, but marked ^{to}
with low broad, north ^w
and south "swells" at ^w
rather regular intervals. ^{up}
The surface between is ^{up}
like the wool on a sheep,
tessellate in appearance ^{up}
with an irregularly ^{up}
curved arrangement of ^{up}
the blocks or tufts of cloud ^{up}
that are somewhat packed ^{up}
together to give this effect. ^{up}
The "swells" are more visible ^{up}
at a distance than directly ^{up}
beneath. Most striking ^{up}
of all are occasional small ^{up}
holes in this surface that ^{up}
have the appearance of ^{up}
vortices or whirlpools. These ^{up}
seem to turn either to right ^{up}
or left with about equal ^{up}
frequency.

2 1931 Hawaiian Islands

July 16 - Niibau, from air. Visibility through broken clouds. Lobe toward south end.

Rosy parts very barren. Grass on slopes and ridges dry.

Frost in gullies and gulches, and scattered trees, probably *Prosopis*, on much of the flat country.

Nothing that looked like native forest seen.

July 16 Gardner Rocks -

Two small rocks, surrounded by cliffs, and an extremely rough sea breaking on them.

Cliffs black, upper parts of rocks gray-stained. Summit of larger rock appeared covered with dry grass. This not certain.

1932 Hawaiian Islands

3

July 16 - Pearl and Hermes Reefs. Pearl shaped atoll, narrowing to southwest. Reef on northeast side very broad. One small inlet in the middle of this. 3 small islets, possibly connected or narrow reef to south end. Islets very low and flat. Light too poor to see if vegetated lagoon shallow, reticulate with reefs. North-east edge of reef apparently with *Hillieranthus* ridge, exposed between waves at 7:30 p.m. Rest obviously under water.

July 16 - Midway?

sight records.

Casuarina equisetifolia

Terminalia catappa

Hibiscus tiliaceus

Vitis trifolia

Leskeola frutescens

Messerschmidia argentea

Verbena strictifolia

Elassine indica

4

1952 Hawaiian Islands

Cuphea heterophylla
Cynodon dactylon
Coupera canadensis
Crinum pedunculatum
Hymenocallis americana
Pandanus tectorius
Stenotaphrum secundatum
Lemna glaucoides
Amaranthus viridis?
Zinnia elegans
 house fly
 Laysan albatross (young)

Trees, mainly Casuarina, have grown up so thick and tall that, from the air, the island has a wooded appearance. Some trees at least 50' tall and 18" or more through breast high. Terminalia large, too.

1952 Wake I.

5

July 18 - Wake I - Driving from airport to the west end of south leg of Wake I.

Quite a change in aspect since April - due chiefly to the green herbaceous layer - grasses and especially *Cuphea heterophylla*.

The *Messerschmidia* that looked dead in April near T4 L compound is still dead. That that was alive then now looks much fresher and greener.

Heliotropium amaranthoides in excellent flower, very abundant south of airstrip.

Land during day
 common noddy
 many sooty terns
 many frigate birds.
 1 Sula ~~leucogaster~~ (^{leucogaster} ~~leucogaster~~)

Charlie Johnson reports that the sooty terns at the Loran station have eggs.

Vial 157 cockroach caught in Pan American Hotel.

6 1752 Wale - Pokale

July 19 - at sea between
Wale and Pokale.

About $\frac{1}{3}$ the way, saw one
white-tailed tropic bird.

About $\frac{1}{3}$ the way saw
4 sooty terns.

1752 ~~Wale~~ Pokale 687

July 20 - reef on west
side is flat, with
a slight littoral margin
near the lagoon side,
good growth of boulders
and a short greenish alga
very from boat.

Passage, at mid-tide,
(rising) with a strong
current running out,
but easily negotiated
with fore-and-aft boat.

Sea very quiet,
no breakers on
the side.

Several long
porpoises or small
whales leaping
and spouting a few
hundred m. from ship.

Pohak Atoll

July 20 - Sybilla Islet, n.e. end.

Vial 152 - bottom layer -

Lepisma caught under
bark of dead Messerschmidia
bushes, abundant but
hard to catch, undamaged.
Parasitic fly, flying.
another, in top layer

Top layer - 2 cockroaches
from ~~dead tree~~
~~dead tree~~ hollow trunk
of living messerschmidia
tree.

Vial 153 - shink from
under bark of dead
messerschmidia.

Very scarce, 3 seen, all
under bark of dead
messerschmidia trees.

Vial 154 - insects caught
around lights.

Jar 16 - 3 large red hermit
crabs. 1 small hermit crab.

1 shink caught in tent

1 rat - mangy, blind (?)

1 small rat or mouse.

small
hermit
crab on
valley
wall on
edge of
valley
above
Devil's
Pit.

1 small hermit crab with
banded legs (in shell) caught
on rock flat above h.t.
hermit crabs in bag from near border
on tiny island bet. Sybilla & Polish draft.

Pohak Atoll

Vegetation, a sparse
to rather dense
scrub of Messer-
schmidia and Scandia.

This varies from
1 m. to 4-5 m. tall. When
low it is about equally
mixed with both
components about the
same height. When
taller, the Messer-
schmidia forms a
top story, with a
denser second story
of Scandia 1-2 m. tall.

There is an irregular
lower story 1-2 (3) dm.
high of Lepturus and
~~bad~~ Portulaca lutea,
the latter more abundant,
the Lepturus only abundant
in open places. The Portulaca
indifferent, apparently
to shade or sun. Boerhaavia
is also present, but
uncommon, and an
unidentified grass is
very local.

Much of the area is
especially toward the
outer beach, is of
bare rock, cobbles size,
occasionally somewhat
loosely covered with

Indo-china House -
very thick, low
and tangled on the
island.

On the island are
large areas of dense
vegetation, mostly
resting on sand. In
July, before we came
here, the ground was
full of burrows
of white-faced shrews, &
which burrowed down
in under foot. The birds
are breeding now with
eggs. They pretend to be
chopped & lead me away
from burrows.

At night very large
red hermit crabs come out.
None are to be seen during
the day. They occupy shells
shells. They may be seen
in dozens migrating to the
lagoon to soak in the water. (pms.)

Papers #1 - 7 ~~moths~~

#2 - many microfilaria

Sample 130 - large chunks
of black scoria - outer
beach.

Sample 131 - pebbles
1/2" to 1" in diameter

not much rounded

not broken or sharp

Abundant on boulders

Sample 135 - flagging, slumping
to slumping, etc. rounded
or granular types of marine
volcanic. Lab area -
between two boulders
at base of ridge.

Sample 136 - Domestic larvae
under dead foliage
on moist sand.

Sample 131 - large pebbles
of coarse white pumice -
outer beach.

Sample 132 - small
gray pumice pebbles
from surface of sandy
ground somewhat
boulders from cayon
beds about in
middle of island.

Papers #3 - fishbones
on boulder ridge, outer beach,
above high tide.

12 1952 Pohak Atoll

July 21. Hybilly Islet -
lagoon beach

34877

1 forming crust on coral sand
on beach above high tide.

34878

On deposits of fine sand
or rough bedrock rock

34879

on branches of Messerschmidia
tree (most trees with low
lichens) in sapling stage.

34880 Turbinaria revoluta S. Ag. (det. Taylor 1955)
commonest coral reef or marshy

34881 Chorococcus

July 21. Hybilly Islet
standard beach

34882 Albugo planaria

parasite on Turbinaria revoluta
on boulders flat beach low marsh

sample #133 - top layer
of soil in small sandy
opening in interior of south
end of islet - large stones
10" thick.

Vegetation of sparse bunch
grass. surrounded by
desert scrub.

13

bottoms a gritty like
soil gray about 1 cm. thick
(about 3 cm.) layered
yellowish, very
smooth white surface

"mud" of the same consistency

sample #134

July 2 - Top boulders 100
to 200' from beach.
Slanted boulders and a
lot of sand and rubble below.
Most of distance beyond
is broad expanse of
sand flat.

About center of ridge a
stack of ridges of
pebbles, cobbles and a few
boulders, piled up about
1 above high tide, about
20 yards wide, with low
crest, inner edge sloping
over sand flat - this a boulder
bank.



This gradually changes
to a sandy ridge. Then
after a short distance
a boulder ridge up to 50'
above h.t.

July 4 - Boulders 100'.
Sand and boulders.
At least scattered they are
scattered to a considerable
distance, ridge, up to 10'
high, several boulders
several yards, great many
topped by boulders in
this part of sand
as noted.

Large mostly stacks
of pebbles, cobbles or
boulders, varying locally
to sand.

Just low stacks in
the next flat with
piled up large boulders,
somewhat horizontal
series of boulders with
pedestal clear. Top of
pedestal on land with
bed of shell rock, a plateau
that front ends from
main boulders low and
then's obviously boulders
can't rest on a previous
higher rock surface.

16 June 1940 - still

July 3 - Big flat

Vegetation - no savannah
flat.34503 *Burseria diffusa*
common on broken sand
in plain ofor *Spartina cynosuroides* ^{in extensive flat}
on sand flat above
lagoon beach.plant reddish pink
flower pink.

Tropical

Vegetation near lagoon
on north west corner -
scrubby *Acacia* at a
sparsely with small
trees of *Messerschmidia*
in it forming a broken
top story. At top of beach
in plain a narrow band
of pure *Acacia*, with
places scattered *Ipomoea*.

Inland this is at a
few *Messerschmidia*,
very sparse, some tall will
scattered trees of *Messerschmidia*,
Pithecellobium, *Acacia*,
Ipomoea and some
sporadic *Ipomoea*. These
broken up. There is
no very great variation of soil
Spartina is added.

July 24 - Nansen Island

No. 154 - Lepturus - in
crevices on rotten log.
Lanceophyllum & next
down below - attracted
to food.

Cynodonid - on grass
after walking it up.

34505 *Lida pallax* W.L.
• 4 dominant ~~and~~ in extensive
scrub vegetation on
lagoon half of island.

• 7 06 *Lepturus repens* (L.) R.Br. ^{on seashore and}
in *Pisonia* grove

• 8 07 *Pisonia grandis* R.Br.
dominant in *Pisonia* grove

• 7 04 ~~The~~ *Messerschmidia argentea* (L.) Pohl.
dominant in sparse fruit
on outer half of island

• 1 09 *Lepturus repens* (L.) R.Br. ^{on seashore}
very common in lagoon south

• 7 10 *Portulaca oleracea* L.
abundant on gravel
ridge at top of boulders

• 7 11 *Lepturus argenteus* Forst. ^(large)
common at top of lagoon bank

• 9 12 on bottom rocks of boulder ridge

Sample 134 soil in
Pisonia clump -
layer - a party formed just
(very local), 0-1", compact
layer 2-3-4" - brown
fine sand, loose, compact
In fact like straw with
broken shells, no close
as to be almost touching.

shrub 1.5 m. tall,
flowers range

loose tufts, culms
weakly erect.

trees 5-6 m. tall, sprouting
from roots, leaves bright
green mostly sterile.

1.5-4 m. tall, rounded,
in rather poor condition.

Cyperaceae.

fleshy stems spreading -
a cording, leaves oblong,
flatish; flowers bright
yellow, 1-1.5 cm. across,
petals a-manganese, stamens
just over 2 mm. flowers with
petals at 3.5 mm
stiff, tuberous.

black, dry

July 20 - Pa'auwai at 100 ft.

South west corner of island
 with ~~the~~^{the} ~~south~~^{south} side of ridge, point
 back head, just south of
 ridge mouth. Slope very
 broad on. West of it
 is Lepturus a few rods
 in considerable abundance.
 Near the beach Pritchardia
 is abundant and
 peculiar very way in
 form of leaf-blade. It
 is quite distinct from
 the common species in
 narrow keeled blade
 and small, larger
 stiff, often curved, long
 spines longer.

North of point a few short
 areas are scattered in among
 trees or bushes, mostly
 poor condition.

From end of point
 north east, Pritchardia
 is in poor stand.

Only, worth going to
 the island, on the north
 side, is almost continuous
 lida scrub, always of
 partly dead tangled

twigs about 3-4 meters
 long, decaying to 2 m. in
 size and these are covered
 a layer that are completely
 buried by accumulations
 of old dried out
 leaf litter. This except
 Pritchardia.

On the slopes of
 the south part are areas
 patches of Pritchardia
 growing from stand
 5-6 m. tall or less. These
 rather small stands
 close together but with
 incomplete cover over
 because leaves are
 very small - seemingly
 almost mature, but
 not normally large.
 The ground beneath
 the leaves is sparse
 Pritchardia Pritchardia and
 little lida. The lida
 is spreading abundantly
 just to roots. Most
 of the trees are bare
 stems & dry thickets.

The lida scrub farther
 away is quite dense
 forming a little obstruction
 to walking. If Pritchardia
 is removed

also with small
purple flowers
that get a lot
of light
and are
with green stems
throughout the
small tree, which
just inside it
but almost dead
was a slender
only one branch
seen in mostly west
Today part
way back, so
there was little
front.

Day of Doggett's arrival
March 20th, and it is a day I will
richly value. I have been away
a small portion of each year
longer + longer.

In Pictures from a
Letter and from a
Journal
Books, Postage,
and Expenses
etc.

the first part of
of the year. The
first year of
the new
monetary system
for a short time - system
was partly based.

It is now a large, fine
and well-grown plant, rising
out of the water, and
about 1 ft. high.

I would say it's a situation
where I'd like mostly
private partnerships, money,
and mostly foundations.

- no left turns on main road
- no dragons back
- cross off reading and
- the founders

I don't think it would be wise to
try to get another one - catched
in the same place.

the end of which a
large broad-leafed
dog, with orange
markings on his body
and black stripes growing

July 23 - 1955
Sandy bottom
lagoon
water 1 ft.

July 23 - sandy bottom
1 ft.

3:00 moderate trade wind
breeze broken cumulus
clouds
dry bulb 31° wet & 29°

July 23 - 1955
sandy bottom
lagoon below sand.

34913

- + fragments, shell and coal
- + *Coccolithus sericeata* (Forssk.) S. Ag. (det. Taylor 1955) always numerous
small colony on sandy
bottom with shell and
coal fragments.
- # *Obelia* sp. fragments
- ? *Tubularia* sp. sp.?
- + *Dictyota* sp. *obtusa* (Forssk.) (det. Taylor 1955) ^{green}
in basin of T. oblonga, Brg.

26 11th October 1911

After -
along the
edge of the

11/17 Dog Day at 10 a.m.
Wet ground

18 Linda's cabin, Way
in which grass, flowers
and ferns.

19 11/19 In morning and
most morning in sun

20 11/20 In morning
and most of day in
bright sunlight, but
under root of tree leaves
and at foot of bushes.

21 11/21 In morning,
attracted to bright sun
and, with bright sun, flowers
of bellflower, and in the
middle part of day - in
dappled shade.

27

22 11/22 In morning
and bright sun, but
under root of tree leaves
and in dappled shade.

28

Portions of diary

July 2 - Slight rain
with a few
in shell and sand
by end of day.

Temp 76°
Cloudy & cool
wind N.E. 10-15 mph

July 3 - Bright
10:30 a.m. Sun above
water temperature 80°
Cloudless & cool wind

July 4 - Bright
7:45 a.m. Light winds
gentle waves and
bright sun with clouds

small bright clouds
10:30 a.m. clear skies
and cool conditions with sun,
dry 86.4° wet 83.1°

Sun 6
7:45 a.m.
8:00 a.m. 80°
9:00 a.m. 82°

10:30 a.m. 84°

29

July 5 -
Cloudy & cool
wind N.E. 10-15 mph
temperature 78°

July 26 - a common fact

On the third side of the
spur of the hill on the
soil surface there is a lot
of tree stumps about 2-3' high.
With the exception of some old
dead dried out stumps, most of the
stumps are green and moist.
The ground is covered with
loose soil, mostly dry
parallel to the main slope.

A local sooty tern colony
in this forest. Ground
scarcely showing any
green stains. No sample.

Sample #135 from layer
about 15" deep - coarse
gray-brown sand, no green
on surface of ground. White
beneath.

Well out into the open
part of the island, in the
sides scrub a small open
place is occupied by another
sooty tern colony. No stains
green stains on surface of ground.

Sample 136 from here,
layer 10" deep of coarse
gray-brown sand. White
beneath.

July 26 - a common fact

On the third side of the
spur of the hill on the
soil surface there is a lot
of tree stumps about 2-3' high.
With the exception of some old
dead dried out stumps, most of the
stumps are green and moist.

Sample 137 from a
forest. Sooty terns and
they are green dried out
stumps.

Layer 1 - ~~white~~ brownish
gray, friable, somewhat
crumbly. pH 5.5-6.

Sample 138-1 white
layer - collected in the
waterfall with coarse
ash, gray-brown
brownish gray, white
pH 7

Sample 138-2
Layer 2 - brown gray
brown sand pH 7
about 4" thick to white.

Sample 138-3

Sample 139 - sand layer
brownish gray, white
greenish gray, white
brownish gray, white
pH 7

July 22

34520

on open wet sand at the
down end of main bar
of inlet

21

on decayed *Messerschmidia*
branches

polymer - fibrous & short
second segment from east
opening with process

27

in shallow depression
in open place

sample 141 - lost from bottom
of shallow depression in open place
surface covered by algae (filamentous)
larger - white with orange
bands - small -

larger - green - small -
large - large green -

34521

34522

21

on algal film on
a pale yellow layer

sample 142 - lost from bottom
of shallow depression
surface covered by algae (filamentous)
small - white with orange
bands -

July 16 - Sample 142
Sand washings
Islet.

Sample 143 - Fattigia sp.
large brownish - orange
islet bottom sand flat
Polack Islet, 100 ft.

Sample 144 - drift sand from
all bottom. Red sand
isometric - very strong
signs of weathering), all broken,
all fine - extremely

Sample 145 - Brownish bottom
surface of sand on top of
of Polack I.

July 24 - Polack Islet
34583 fungus

Crinoid, and sea urchin
in rotten drift low in
interior of islet

34584 Leucosolenia fruticosa (Nelson)
top of sand ridge along
lagoon beach, dominant

July 24 - Polack Islet
In general, low sandy
bottoms on lagoon side.
Coarse, broken sand
with scattered fine
fragments. The sand
is, however, very
fine, sandy, with
little or no fine
sand. Very little
weathering, but
some breakdown
is visible. The
bottoms are
mostly broken
and sandy, with
little or no fine
sand.

wooded - about 10 m.
tall, green and brown
shrub

July 25 Detached soil

Sample 144 - soil 20' up
from base of a small
mound east end of a low
lagoon beach.

Layer 14" + thick - low
sand with no fine
minerals slightly rounded
at surface, others more
light brown.

Sample 145 - soil profile
from well 300 m. f. sea
level and 6 feet above
center of a small
ephemeral sandbank.
Sands mostly white
sparce leptosporangiate
Potulacea and a little
kida.

Layer 1 - 0-5' loose
medium coarse sand
brown sand the fines
concentrated at surface
(surface of small
gravel strewn with
boulders). Sample 145-1

Layer 2 - ~~very~~ 10-14" very
fine very fine sand
compact, gritty,
with some coral fragments.

Sample 145-2

July 25 Layer 3 - 14-20" gray
loamy sand

Sample 145-3
Layer 4 - 23-31" gray
brown coarse sandy

Sample 145-4
Layer 5 - 33-49" light
pinkish rather fine
well lit. with broken
fragments. Sample 145-5

Layer 6 - 49-65' +
soil indicated with
intercise mixed with
dry, fine material
whitish. Water in
this layer.

Sample 145-6

Water sample no. T.F. 2.
Vial 145 - Animals from
root crown of Leptosporangiate

Vial 145 Liquid from a wood
Caterpillar from a ground
Cockroach, insect, pond
scorpion, etc. from under stones.
Old ~~dead~~ pupa case from
abandoned birds nest.

Vial 145 - liquid from
mesophanidic rock
at end of island.

Sample 14 - 4' 6" thick
of clay from well in
Layer 3 or 4. It is
an open area, where water
is moving with little
current - it is about
10' above base and
with a little silt, and
very little organic up-
tilled material - silt
on surface is brownish
yellowish ochreous yellow
but can finger it out
against, straight sand
or algae. No fossils.

24505

for want of samples.

Layer 2 - fine compact
sand, standing up well when
wet with silty streaks when dry.
Light gray-brown tan yellow
or tan.

Layer 3 - 22-28" white
coarse light brown silt
containing fragments up
to 6-8" diam. and some
large fragments.

Layer 4 - 28-32" white, very
fine white wet silt
mostly rather fine but with
some large fragm.

Sample 15 - 4' 6" thick
of clay from well in
Layer 3 or 4. It is
an open area, where water
is moving with little
current - it is about
10' above base and
with a little silt, and
very little organic up-
tilled material - silt
on surface is brownish
yellowish ochreous yellow
but can finger it out
against, straight sand
or algae. No fossils.

Vial 1 - 2" white
clay with white
organic and mineral streaks
indicated by a few small
fragments. Tan, yellow
and brown.

Wetland - S. of town

29520 Mysid on tail of *Calanoides*
and through grasses
between 1-2 m. of water

at top of slope, with thick
grass and undergrowth
with *Calanoides* present, and
water about 1 m. deep

at base of slope

29521 Same as 29520, *serrulata* Forsk. J. Ag. (det Taylor 1955) ♀ - .

29528 Mysid ident. *okamurai* Satsch. (det Taylor 1955) ♀ - .
most likely

29529 Same as 29528
on sandy bottom

Paper 50 - light sand
alternating with dark sand

Tunisia

Tunisia

Tunisia

Jan 16 - 17 - Sampled
rock & shell material
and soil at site of
abutment

Sampled in glaciated
bedrock area.

Jan 17 - Found a few
smaller pieces above
high tide line in
abutment.
Then came down
in search of larger
material, however found
nothing further up. Up
in bedrock, to which
high tide went.
Found some large
calcareous rocks in
the bedrock. Took a few

Jan 17 (cont'd)

found a few
large boulders in
glaciage bed, Karrow
Creek.
Searches above bedrock
yielded few small
fragments of
bedrock in sand.

July 26 - Spent a day
in Boston & the
evening had a talk
with Mr. & Mrs. C.
and at last

34731

32 *Valonia* Farbacei Harvey (det. Taylor 1955)
on a live rock.

33 *Laurencia* fragments and *Lithothamnion* not
in interstices of *Porolithon*

34 *Valonia*? *aegagrophila* C. Ag. (det. Taylor 1955)
in ~~grows~~ *Porolithon*

35 *Haliophila*
36 *Haliophila*
37 *Haliophila*
all in ~~grows~~ *Porolithon*,
reef surface

38 *Tube* *for* *serrulata* (Forst.) J. Ag. (det. Taylor 1955)
living tubes in reef surface

39 *Microdictyon okamurae* Sitch. (det. Taylor 1955)
~~in~~ on reef surface, mostly
in deep crevices, in sand,
but exposed to sun

40 *Canthigaster*
living bodies in reef surface

41 *Porolithon* grayish pink

42 ~~Porolithon~~ *pink* near edge of reef

43 *Porolithon* in holes reddish pink

44 *Porolithon* pink

45 *Porolithon* ~~pink~~ *light pink*

This section from 34731

+ + + + +

partly up - mostly sand
A few thin soil layers
elevated - so to speak
just above the high water
level - and the
bottoms being
lowered down
and some of the
flat bottom was covered
by a large pile
and caught up in
front of sand -
about one third of
the flat sand -
and scattered sand
scattered there - were
there a few stones in
joining between the
flat bottom and the
soil of the old river
bed - and a few
of the flat sand
scattered here and
there - and the
bottoms were
abundant in a few
calcareous stones
The sand was to a great
extent of yellowish tan
topping the sand and

the surface, and pitched
out of the water, so as
to form a low embankment.
The top surface of
this is composed of
fragments of
coral, broken shells,
and small fragments
of sand and pebbles.
On the upper side
there is much sand
scattered over the bed
of the greatest living
rock surface about
low tide this is about
1 m. below the platform;
In the fragments, fine
sand is intercalated
in them.

There is no vegetation except disoloring of rock
so far by microscopic algae.
Fair, tan & eggs in rock.
Moldie, Precipitating, and
brownish algae observed
sprouting. Hermit crabs not
extending above high tide. Blue
gobies common in rock between
tide, about 4 to 5 inches water.

ftd. from H. A.

34545 Prohibition

from below stage 7

July 27 - La mesa 1st

v3 46 *Neoblasticus diffusus*
in broken ^{open} savanna
forest.

2) 47 Albuq. platensis
palearcticus Boettger

July 27 Passage 6th

Breast and belly are

5 48. *Lia gora*?
in shallow water, not
just below low tide line

Sample 152 - Picnic
Leaves dried picked up
from ground in open
on Palms.

Sample 39 - More slender
leaves dried, packed up
from ground near big lake

Vial 164 - Kawarau, lot of
Pisonia grave. Found it by
from dead Pisonia tree
and branches. Not
big caught big &
apparently 2 sp. - if
Pectilia.

Eng. & friends

substrate, root-forming.

getting lost on
most occasions.

poly pink, gelatinous.
+

Vial 170 - Detritivores from
Leucosia scrub, Mt. Shasta,
eating ~~the~~ mesophotic leafy layer.
Other spiders and insects
from ~~the~~ layer of dead
leaves on ground under
~~the~~ *Messerschmidia*
+ *sc* at top of ^{eggs} plants -
oilylla wet

Lilium (det)
In the bottom layer much
from leptosmes refus Tufts,
including red color.
~~—~~ *Lilium* Coccineum is from
Portobello.

Top ~~bottom~~ layer - spiders, ground
insects, from tide pools.

is very well developed.
Note large number
of small & minute
and well developed
organisms and the
large size of the
organisms.

The larger forms have
been found to be
mostly dead
or dying
especially at night
when they are not

sample 12 - Found to be
well developed by 10 am
on Sun morning
There about 50% of the
single species form
as by the morning in
this culture. There
is probably a fair
proportion of the single
cells as formed in
cell死去 in the
morning. Perhaps consider
also. See graph p. 57

In general vegetation
with T. laevigata, Bamboo,
~~and~~ vegetation type
in P-Bally, mostly dominated
by a single species. Various
combinations of these
occur, as well as
different ages of the
dominating species.

The tree that I saw
at Stoll's place was
in a subappressed
state of Homalanthus.

There were other
trees in the same
area, but they were
not as large as the
one at Stoll's place.
The Homalanthus
was probably
about 10' tall
and about 10" dbh.
It had a few
small branches
and a few small
leaves. It was
mostly bare, but
had some small
leaves here and there.
This was probably
the reason it
was so small.

Today I saw a 10'
tall tree with a
large leaf on top
of a short stem
with a few small
leaves. This
is probably the
same tree.

The other plant type
is a pure Lindernia forest
not dominated by any
particular species.

It is dense, but
not tall or well
developed. It is
very dense, but
not tall or well
developed because
of the presence
of many small trees.

It is quite tall
but not very tall
or tall enough to
cut out anything
but the tall trees
and patches of grass.

Lindernia is the
dominant species
and this is probably
increasing at the expense

This is commonly so dense as to impede walking through it. It is also of a characteristic bright green or yellowish green color. It generally covers the ground completely. It is ~~usually~~ often ^{seen} on rock or broken coral trout by no means always.

The low spreading
branches, often covered
by wind-blown sand,
send out roots and form
new plants. This has
been, therefore,

The other wood type is a ~~so~~ usually low thin scrubby
Acacia falla. This varies from 1.5 to 2 m. tall.
and from rather sparse to so dense as to be unpleasant to walk through but offers no real obstacle because of the weak nature of the shrubs. There may be a practically pure stand, but more

This type of adobe
is precipitated onto
a basal - gneissic
rock, one foot, species
of Lepturus. This
more granular aspect
this is sand and
is also covered by
streamwater limestone.
On this ground depends
a rock in a sandy
available ~~wooded~~ growing
habitat. It is very
sparse and scattered.

assembly of all
and of the species.
The limit of the
is a small number
of species, the
of Ptilodus leucurus
and leucostictus.
Resembles to some
the Leucosticte and spiza
among the winter visitors
and in summer in the
from Siberia east,
Ptilodus may visit
in pairs and may
when it fails to find
into the upper air
on reaching home.

over 2000 m. above sea level, and
it may be less efficient
protection. It is
and frequently does
form a ground cover
under ~~grass~~ fields and
and ~~the~~ ~~the~~ ~~the~~
forest. It usually is
sparse under any circum-
stances, and does not
completely cover the ground.

A prominent feature of the landscape is open broken coral, scattered over the tops of boulder ridges, or boulder flats, commonly on the seaward side of

with the result that the
~~steaming~~ steam and
the heat may cause
vegetation to
burn to the ground.
We can do little to
stop such a disaster
(Continued)

Takes a prominent beat
and makes waves of, and
now - won't quit shaking
big, tidal bore,
both seawards and
especially easterly, I do
see, also, the coastal
bluff - grass, I suppose,
is broken, edges of
otherwise stable edges,
the vegetation, etc.
they all show ~~are~~ signs
of it, though in some
parts ruined almost
moderately, though many
surviving, though + it
was said to be dead
patches of ~~the~~ grass.

In this plan, a larger circle
can be without a center
and the boundary ~~is~~ will be

The covered walk
is of slate and a wide
open platform runs along
it and covered with a

Dominant growths
of various species
of Posidonia, the major
of T. c. revoluta, and the
but little live. Remnant
Littoralia is found in
with a few zostera, among
of a variable
Littoralia.

In addition to the
two species of Posidonia
are abundant and
various green algae
which live on Milano-
stictyon form occasional
tufts on the surface.

The windward reefs
were not examined
closely, neither was a
Littoralia ridge
evident.

Patches of reef grass
inside the windward
reefs are reported (as
C. J. Johnson) to be essentially
similar to those outside
the leeward reefs.

An outstanding feature
of all the land vegetation
at the time of the observation
was the appearance of
extreme dryness. The
Phragmites had
lost all but terminal

parts of their life
cycle, and have
mostly disintegrated and
lost most of its living
material, but still
of remnant areas it
is evident that they
are far from healthy.
The Littoralia on the
windward side
~~had~~ had been
dead for three
years, some complete-
ly. The Posidonia plants
were only a fraction
of an inch tall.
Posidonia is a good
perennial in cold water
but at the lower level,
all but the most sheltered
parts of the Littoralia.

Lepturus ~~was~~ had
lost much of its
secondary branches
with short leafy side
branches. A striking thing
about this species here
is the forming of short
thick tufts about a
foot high, with short
branchless secondary
or dead vegetations.
Both species of Lepturus
were mostly grey-brown.

upto with, and when
it was at low water
had only 3 or 4 feet
and small islets of
grass were scattered
Catulinae about
over about 1/2 acre
than any other, but
not a single tree
diminutively scattered
at the edge and the
soil very poor.

In interesting fact
in this connection, was
that the aspects of
the land were very
varied, some being
on the leeward side of
some hills and the
higher ridges of Pitcairn
Island.

The Messerschmidia
trees on most parts of
the atoll were partly
dead, not least had
dead branches. Judging
from the guano deposits
under the trees, the dead
limbs were the habitual
roosting-places of
boobies and frigate birds.
Whether the limbs were
dead from the cause, or

of the land
I could hardly say
but it was not broken
because of the great
load of a tree
the vegetation had a
very bad appearance
apparently because of
a ~~no grass~~ ^{unidentified}
lacked by the general
over run of foliage
in the trees and their
plants, and the ground
covered in dead dry
tufts of grass.

No Lidya, at this time
had presented a very
unpleasant appearance.
practically all of the
plants were withered,
dead, and the general
aspect of the field was
one of dead grass
stems.

1. Mouth, flat-topped, 3

2. short, flat, the same as

3. long, flat - all 3-23, 30.

The sparse outer belt
of *Messerschmidia* varies
from half the width
of the islet to less than a
fourth toward ^{and larger}
one fourth of it on the ^{and larger} north side.

Comparison of 1948 and 1951
photos shows that the
Pisonia forest patches are
gradually growing.
Also that the relation
of Lida to grassy areas
in the open part is not
a constant but a shifting
one. The gray places on the
photos are Lida, the salt
and pepper ~~—~~ parts are
where shearwater burns
are abundant, mostly gray.

Dark portion on scalloped
coast, lagoon side, is bare
rock, undercut by water.

Sandy patches on seaward
side or in front of gravel
ridge have much Cordylax
in openings between
Messerschmidia trees. Low
also on Grindelia ridge and bare rock
on s.e. corner of islet, some Acacia here.

4. P. ago I. flat - see p. 10.

On open belt near a
large area of sandy
soil with scattered
trees, Acacia and
other *Messerschmidia*
near lagoon and
occupying lagoon
cont except for narrow
corner which is a small
patch of *Thespesia*.
~~—~~ Lagoon side with
some *Messerschmidia*
bordering all the
this to seaward is
sparse *Messerschmidia*
and forest with
nothing much below
except scattered Honey
tub. plants, the Cordylax
and Pisonia parts of
the borders of the alios,
digited parts all dead.

Dear and from this is an
annual belt of bare
broken coral, mostly without
vegetation, to all with
Messerschmidia. This
does not come back very
far toward the lagoon
on the south end.

Outsides this is no annual
salt of sparse *Messers-*
schmidia with locally
(at p. 90)

or do,

part of the season.

Black-footed albatross
Puffin - also
two species of
Red-tailed Tropic bird
White-tailed Tropic bird
Red-necked Booby
Blue-faced Booby
Brown Booby
White-tufted Booby
Least Booby
Red-tailed Booby
Blue-faced Booby
Golden Plover
Wandering Tattler
Common Tern
Little Tern
Roseate Spoonbill
Red-legged Tern

Black-faced Booby
Red-tailed Tropic bird
Red-necked Booby
Blue-faced Booby
Brown Booby
White-tufted Booby
Least Booby
Red-tailed Booby
Blue-faced Booby
Golden Plover
Wandering Tattler
Common Tern
Little Tern
Roseate Spoonbill
Red-legged Tern

The bird could not be identified with certainty
as he had neither the
brownish plumage,
the very close set to the
gills, and the white
on the head and the
breast being diffusely
concentrated on the
anterior side of the head.
The top of the head
and back are gray, young
birds having strong
feathers on the head
ready to fly.

This bird could not
be identified with certainty
as he had neither the
brownish plumage,
the very close set to the
gills, and the white
on the head and the white
upper mandible 15", tarsus
15", middle toe 28", and 5".

the first time
I have seen them
in the field. They
are very small
and thin. They
have a long tail
and a short body.
They are very
thin and delicate.
They are very
thin and delicate.
They are very
thin and delicate.

they are very
thin and delicate.
They are very
thin and delicate.
They are very
thin and delicate.
They are very
thin and delicate.

For quite a time - as you were
providing the food and the
heat - the turtle
would not eat anything. I was
afraid for the little one's
survival - so I took him
out of the nest and put him
in a small box with
moist soil after the eggs
had hatched. He
ate quite well on it
at first. But as time
passed he became
more and more weak
and finally died.

Pestle and mortar
are all except broken, but
are very well made, and
are fit still and to go right, ^{also now}
they seem not to be
especially so constructed
as to grind or pound
any particular kind of
spices. But it is the first
place where I went where
where I have any supplies.

the man Wilson who called
the meeting wanted the
last few speakers to
be alone at the podium.
Then Sister Davis was
approached by a young
boy asking when ~~she~~
a speaker gets to sit in
a seat later. But she finally
came with her people fairly
soon.

When a small boat crossed the lagoon and made a landing, a half dozen or more boobies would alight on the air at once in clinging over it. Normally at any time of the day, there were a few in the air. Occasionally they would snatch fish from the surface of the water, and now and then, especially toward evening, it was possible to watch them pursuing boobies to pirate their day's catch of fish. It is a rare sight to watch these two superb fliers in an aerial contest. Contrary to the general opinion, it was observed that the boobies often got away without disgorging their fish.

Red-tailed tropic bird

I saw them by day,
fed by some party of men
over one of the rocks,
and above ground incubating
eggs in small colonies.
In all except the ~~bottom~~
the bottom part of the island
there is almost no green
growing vegetation.
These have black and
white banded feathers
on wings and body, similar
to a banded rock shrike
and black hills. Black
tegus and iguanas adults.

They do not mind
~~disturbance~~ in nesting at ground
their eggs. They are
at no time very approachable
but will not leave their
eggs even when their nest
spitfire like coil foot can
be suddenly pulled out.
As with most of these
seabirds, they will bite
vigorously when molested.

White-tailed tropic bird

Only one of these was seen
over, flying over the
seaward side of the reef.

Red-tailed tropic - They
are up to the tops of the
rocks, at least a good
distance from the water.
They may be found
scattered, resting in
the trees and fruit of
the island or ^{or} ~~in~~ ^{on} ~~the~~
Mossy redwood trees
occurring but are less common
and probably rarer than the ~~the~~
~~the~~ During the day they are
seen much more often
sitting in the trees than
flying, so it is probable
that they do their fishing
at night. Judging from
the guano accumulations,
each bird must have
a particular drama
that is his favorite roosting
place. They do not seem
to be gregarious in the sense
that they congregate in groups.
They may be approached
closely, only attempting to
fly when actually molested
or, sometimes, when a person
is within a very few feet.
One when disturbed, diagnosis
half a dozen fair sized squid.

A very few young birds were
seen, and no bird incubating an
egg in a nest in a tree.

Went to the - 2 Aug
Left at 7:30 AM and got
off the train at 8:30 AM at
the station. The party was
an interesting one, mostly men
and boys. We were all dressed
in old clothes. When getting
off the train we went immediately
to the river, particularly
along the west and side
of the road. They were
not slow moving and
little ~~activity~~ in their
actions or movements or their
habits. The most popular
fascicle was the one of the
game of ludo and cards.

Brown-headed Cowbird -

No nesting birds were seen, but almost all young were not seen.

Again it was difficult
to follow another of the men
of the tribe to see if any,
as their tracks were not
so well known.

Sooty Tern - *Onychoprion fuscatus*
A small bird about
the size of a
P. Wahl Albatross. Can
be seen at a great
distance over the ocean
and very far out from
land. It is a pale
brownish grey.

The sooties are more
numerous than any other
birds in the ocean
but they are not
so numerous as the
gulls. They are
seen in pairs or
in small numbers.
Sooty Terns are
nesting places on the
gigantic sand banks
vary in size from an acre
to several acres, may
lie in open scrub, but more often
in the open part of savannas,
sometimes isolated
groups with low banks,
usually in the center
of such a colony. The
birds sit upon them
so numerous that the
ground is covered.
The ground is definitely
not noticeable, stained
with guano, little pools

of water are scattered
over the surface of the
ground. The birds
are very pale
brown being a brown grey
which is quite uniform
and featureless. The young
birds are covered with
down and in all stages of
development from hatching
immature chicks with
wings only feathered. To
young grown birds perfectly
able to fly, differing
from their parents only
in plumage. The young
have the feathers on
back and wings tipped
with white, and the
under parts more or less
black, with white and yellow
edges, and under side of wings.

If the behavior of the
sooty terns of Polynesia is not
at all typical, it can not
seem likely that sooty terns
contribute materially to
guano accumulations.

Flight of birds in
the lagoon. -
The first flight
was about 10 A.M.
and continued until
about 1 P.M. They
were undivided but
flock feet and wings
had no motion.
They were with some
difficulty. Several
flew back and down
on the surface of the
water but they did
not fly fast. They
dropped frequently with
the intention.

Crested tern, - It was
time of flight, day long, &
to the sky, day after day,
ungrateful bird would
be seen, about a gull,
along the lagoon banks
of any of the islands, perching
the shallow water. It
was necessary for me all day
there during sunrise or sun
set a regular time, one
of the most frequent
sound,

Flight of birds in the
lagoon. -
The first flight
was about 10 A.M.
and continued until
about 1 P.M. They were
gone along with the
clouds flying about the
ground. They were
seen and now I am not
able to say when they
did see them. They
were sitting on the
water. They would go out
a short distance to
the air about a half
hour before they
would return, returning
at 10, ~~as~~ everyone according
by custom. This was an
unusual - the common
return of the ~~air~~ birds
in dry weather. I cleaned
~~the~~ boat & went up the
lagoon to the sea and while
I was there a small white
bird, supposed to be a lagoon
gull, was flying about the
water. It was the moment
and still company.

White-tail Tropic bird
was the commonest
bird to be seen both in
the lagoon and on
the land. I saw
a great number of
groups of mostly
fledged young birds
of the breeding season in
the grass on the marshy
parts of the land. I
also saw many birds
in the lagoon eggs &
young, and some adults.

Fairy tern - This most
charming and graceful
of sea birds, is to be
seen at any time in any
of the islands or on the
lagoon shores nearly
year. During the hottest
part of the day, they tend
to rest in the dead shrub
trees or ~~on~~ ^{near} low-lying
ground on the marshes.
They however, are to be
seen throughout the
brush, venturing to
almost within arms'

distance from the
water to get out of
the sun. They are
very tame and will
allow you to get close
to them. They are
a bright white color
with black tips to their
wings. They have
a dark band across
their tail feathers
and a dark band
across their wings.
They are about the same
size as the northern
Mallard, but have
the smaller and in
much less pointed than
seen elsewhere. In fact,
it is almost the same
shape and size and
the birds are induced
to leave their eggs only
with some ~~of~~ ^{great} irritation.
However, theyighting back
again, forth in other
learning is pleasant to
watch, when the careful
way of approaching and
settling down on the ⁹⁷

and the two
seem to be the same.
On May 22, 1910, I saw
that there were many

blue-eyes fairly scattered
throughout the island,
not seen elsewhere so far.
This species is smaller
than the fairy tern, and its
exactly like white-fronted
shearwater, which grows
shady if the weather will
allow boulders and past
so close a resemblance to
Pohak has escaped. Small
numbers of these birds
are to be seen almost
anywhere their country
is as well developed as
is that of the fairy tern,
and they seem even here
afraid. On the more
wooded islets, as by the
Brue, Pohak, they seem
to prefer the interior seaward

side ~~to~~ the outer side.
I have seen them
gather in small flocks
along stone ledges
and flats on the outer
seaside as the season has
been. They mostly went
in pairs and some
of them alighted on
the plants and
some for a while by curious
means remained alone
or go nowhere on these

ledges without a
constant accompaniment.
It is likely, however, when
it is alighted on their habitat
it suggests that they might
be nesting, as eggs have
been found in a
nest as described from
a small cavity nest.
There is a slight accumulation
of green stems and feathers
in a slight depression
sheltered by two rocks
on the boulder ridge on
the seaward back of Pohak.
This was probably one of their
nests, as the color would
suggest this as their normal
habitat. It may be noted that
though the male between this color is
adult orange rather than canary yellow.

at this season. They were scattered at first, and later in the afternoon the group scattered into smaller flocks, wintering in pairs or still enough to allow each of a pair, apparently pre-mating, to have a long line.

Golden Plover -

These are scarce now and I saw only three after dinner. They are mostly in the winter plumage as in the winter, with golden and dark brown, white below. This individual was seen, however, to be at one time (C. J. Johnson) in the brand-new sp. in. plumage, dark brown beneath with prominent white patches and white line along the sides below the wings.

Blue-billing Tattler -

There were a number of these in the neighborhood, some in flocks, others in pairs, and others, with others, of which must be mentioned, the gray-bellied, before winter. They are found along the coast, usually associated with the other s. No common or familiar song at this time.

Terns: -

A few of these were seen along the coast and bays, usually in pairs. These, sometimes in association with tattlers and plovers.

Bristle-tailed Curlew -

Curlews were seen more commonly than any of the more southern jays. They were mostly in flocks of 2 or 3 and more, in fact. Usually they were associated

in small groups of two to five birds. One was seen a g. from a block of filter blues over coral reef. Left it at 100 fms. I saw a group of 5 tangs. A pair of terns perched on top of a rock 100 feet off where I was sitting. Another group of fish spent half an hour circling and diving around within 100 feet. Saw one pair of boobies, and a pair of boobies. They did not seem to be nesting. Found oil over particles, with its bill somewhat open and quivering. The day was very hot.

Reef herons

These were seen occasionally in various situations - lagom ~~off~~ beaches, passage and near a reef, one inland and one on reef on west side of the atoll.

White III

Mottled III

Dark III

The soils of Polynesian Atolls are almost always of a type of sand with slight altered and sand and soil laterite completely covering the surface. In each case there is a thin layer of a fine sand layer with some larger stones and iron pyrite mixed in from the fragments.

On the older and more isolated a few thin layers of a brownish reddish ochreous material are visible. It may be of various textures but usually has a slight decoloring at the bottom and the grain becomes coarser and more irregular, becoming yellowish orange, i.e., yellow ochreous material. The two most frequent textures are a rubble of angular sized particles in a sand matrix, and a fine sand. The sand is usually the habitat of arthropods, which

by the sand which is to
be cast, and is to be applied
to the surface. They often
leave marks which are not
seen, though the surface
is usually bare. The surface
is often broken and
irregular. It may also be
parted or wavy, so
that it is difficult to see
the low-lying fragments
which are scattered
over the surface at
night.

Additional point - It
can probably be suggested
with the following in mind.
This is a small greenish
patch of a fine sandy
dry soil & where it is thick
~~soil~~ and dense may often
be found actually moist.
It is not known whether
any of this soil is less
sufficiently developed to
the number of a different
type of it would suggest
that there might be
significant increases of
phosphate as concentra-
tion was noticed.

Under the poisoning, a very slight foot drop movement was noticed.

The first several days spent on the atoll were hot and dry. Clouds were usually to be seen but small and scattered. Below 21° 27' V. 2° there was a few scattered showers, not enough to moisten the surface of the ground.

There were no birds. The only animals that might have introduced by man were also - at any rate - skunks.

Rattus exulans was fairly common, with a dozen or so seen at about sundown while walking along beach-line - oil cut in scrub. Quite a number were attracted to camp and came out at dusk and after and to forage in garbage pit and around camp.

Skunks were fairly common, but not so much as as on other islands in the northern Marquesas. They were also small, relatively.

The large red-tailed cormorant is common. It inhabits mostly lagoon shores, a great proportion of it in turbid water -

and very few in clear, large shallows, not swift. The big shallows water can be gathered near the fringes of livers on the reef patches in the lagoon. It sport low-tide level, perhaps elsewhere. It is probable that the population of cormolites is limited by the number of turbid shallows that are blown out.

On the west side of the island, around and under the edges of large and large rocks, that the boobies alight, before sundown (5:30) they start toward beaches. On seaward side they enter water. On seaward side they are very cautious about the waves, only scurrying to go as far as the upper limit of spray-wash.

At night they wander around the island.

large salt d.) ^{the red sand}
gravel is of yellow sand
On the outside is an
extensive ridge of
broken coral with little
vegetation - some man-
grove scrub, some *Lumnaria*, some *Sesuvium*.
There is a lagoon left in
the sand bank between
the two ridges.

Stretching across the
inner back of and ~~south~~
of the large westward
lagoon side is an area of
heavily scrubbed with
a few scattered *Messerschmidia*
scrub trees. This is
mostly quite dense, but
at the back of the western
ridge a strip of it, apparently
corresponding to a channel,
is more open.

The inner portion of the
south (smaller) section
from the lagoon back to
about two third, the way
to the seaward beach, is
spars *Messerschmidia*
scrub forest, the central
part on marshy tidal
parts being parts covered
with gravel. Much of this extends
toward the south east corner

the substratum is
bare irregular rock
surface. This back
lagoon ridge continues
about one mile where
the scrub forest starts.
This is ~~over~~ a layer
of about m. of rubble
and gravel ~~littered~~
over the rocks.

The outer portion from
this rock to the seaward
beach, is wind blown
sand with mixed
Lumnaria and *Messerschmidia*
scrub up to 3 m. tall
stiffly wind curved,
is mostly parallel with
the wind with strips
of bare sand between
them. The sand is well
mixed with pebbles
and rubble.

Along the passage
there is a ridge of
broken coral changing to
sand about half way
to the lagoon.

In the passage are two oval
gravel bars, depressed in the
with a strip of red
conglomerate edgewise,
and a great rubble flat seaward.

To the west of a lagoon the
vegetation is fine
and sparse, but as
you follow the coast
it becomes more and more
dense. Along the ~~coast~~ ^{lagoon}
there is a low sand
ridge with
the salt marshes on
either side. A high ~~ridge~~
with sparse ^{scrubby} ~~grass~~
and ^{scrubby} ~~grass~~
in it, occasional
sooty ^{scrubby} ~~grass~~
and ^{scrubby} ~~grass~~ ~~scrubby~~
here at places. It changes
to a high ridge of unbroken
material - gravel, cobbles,
and a few boulders, about
9' above high tide level in
the lagoon and about 4.5' above



level of sand in interior
at lowest place this sand
is only 2-3' above h.t. but
average seems to be along.⁴
The ridge has Messen-
ian soil mixed with Petulca
and Chiribiquete little grass.
There are several stretches
of such ridge along the

lagoon side especially
to and the island.

For want of time I did not
get the Macleayia to flower
along the lagoon shore
so went to a nearby
bedraggled copse of trees,
with many lead flowers.
This is probably best
found now in old
trees.

In front of jagged
shore is a belt of
sand flat, with
sparse tidal scrub,
Paspalum, *Pentzia*,
a little *Jasminum*, and
scattered trees or shrubs
of *Messerschmidia*.
The area is a mix of
scrub & savanna,
rocks, dry ground
is covered with
thin humus and the
footing a massive because
the former's edge is
so bare stepped on. This
area where sampled
had a layer of very
fine grayish sand
on the surface up to 2' deep.
In the aerial photos it
presents a salt-pepper appear-
ance because of white sand

brought up from behind
of the beach, the
beach itself, the
soil and the growth
of grass and the bush.

Most salt is sand,
sea weed & fine gravel
scattered here & there.
In an under story of
Lavatera about 15 cm.
high. The main part
is 3-5 m. high. Individual
trees height 10-
15 m. It is a small
island though, growing
on a gravel bar
from a talus. *Cordia*
beddoe is a beginning.

This belt is locally
replaced in some places
of dense *Leucosia* and
with it without scattered
Messerschmidia and
with no lower layer.
This is as dense that
it cannot be walked
through, forming limestone
without a mat etc. The
belt ~~between~~ *Leucosia*
subviridis & *Leucosia*
is ordinarily a mat
but this varies to sand

in thickness.

At a point of the
outer beach, directly
across beach and sand
is a large area of
the same sort. It has
broken sand in which
seaweed sits in patches
and flats. It is mainly
intermixed with green
color, due to fine sand &
algae in the outer layer of
the white limestone. It
may represent no macro-
scopic vegetation at all,
or scattered *Messerschmidia*
scattered *Lippia cubana*
with small plants dead,
or very locally. *Potulina*
and *Portulaca* on sand
accumulations, *Salsola*.

In the southwest
and along the sea
ward beach becomes
sandy, and a sand and
gravel flat extends
diagonally along the passage,
probably representing
a filling in of part
of the passage. It is being
covered gradually by
small *Messerschmidia*
bushes.

The passage was dry at low tide - no plants were seen except for a few salt marsh grasses, about half way between ocean and lagoon. The passage of about 100 ft. of tidal coralline water, during noon, with enough weather, around high tides.

On the 1951 photos the area was dry, & showed a trail or some type of linear, possibly, vegetation, but not at all evident on the 1952 photos, nor could they be located in the ground.

The passage is now evidently filled in very much since 1951 and vegetation on the south-west end of the lagoon become more abundant.

Small islet just S. of Libyella - scrubby mixtures of *Messerschmidia* and *Scaccola*, more thin around edges, much more developed than in 1951.

7. Next point.

More like a coastal *Messerschmidia* - rather sparse, especially on exposed, sandy, flat, not far from the beach, continuing to include most of the passage to the east, and the whole area and some *Scaccola* intermixed but sparse. A dense patch of *Scaccola* scrub in center. *Scaccola* on two sides of lagoon beach, not in center.

8. Between coral ridge along outer side, with *Messerschmidia* sparse. Along lagoon beach a gravel ridge fading but southward, gravel and sand flats on passages and seaward slopes being colonized mostly by *Messer.* *schemidii*.

Next passage deeper, dry at low water, ssheeped. Gravel flat being colonized.

1. A flat - a wide west of ridge, dry & low but about 2' above ridge, intersected by a series of sand. Water in flat dry - sand mostly gritty, bits and pieces *Messerschmidia* - it is without much trace of seaweed, a few small *Zizaniopsis* plants, this esp. toward west of ridge, along seaward side.

Upward toward west end, broad broad-sand ridge, a bouldery part about. It is covered *Messerschmidia* and other ridge gets lower and rockier and more scattered.

Bent end a gravel flat, with gravel ridges up to two yards, they go to scattered sand and *Messerschmidia* bushes with a few short small tufts between them.

Then it ~~goes down~~ thins out to an interior bare gravel flat just being colonized by both kinds of *Lepidium*.

2. A flat - a wide, low & sandy and low-lying. This especially, has very little, if any, low-lying vegetation, no *Zizaniopsis*.

3. Next inlet - wider, small inlet, low vegetation, a lot of bouldered boulders, 6' or 8' high, and wide, grassy, very spilted. Hermit crabs and littering of this.

4. Pollock inlet - wide, and a gravel flat, bare & colonized by a sparse vegetation of *Zizaniopsis*.

The dredge beach is lined here and there, except at extremities, by a great sand ridge up to 12' high above l.t. level. Toward seaward side ground becomes more and more rocky. Some boulder flats in seaward half.

The eastern half of the inlet is solid *Seaweed* scrub, with scattered *Messerschmidia*. Toward east it is sparse enough to walk around in, between clumps.

In a distance of about 3
to 4 miles back of the coast
lagoon, the sea bottom
rarely drops into a
flat sandbank, from
which a few feet back
of the shore, the first
few feet landward
of the sandridge is
low and sandy.

Between the ridge and
the beach there is a
gentle slope, which
slopes down to the
so-called flat, mostly
recently colonized
mostly by the
cylindroid trees.
In the middle of
the flat, however,
there is a low, green
and sheltered spot
in which the flat of
the sand is only 1.7 m.
but it becomes lower
as one goes down
into the trees. Other
cylindroid trees, mostly
in clumps, 2-5 m. tall,
a thicket is continuous.
The seaward from the
gravel-cobble ridge, is

about 100 m. wide
at the top of the
slope.
The beach is dry and
is covered with a
thin layer of gravel
at the water-line, to a
depth of 1 m.

- v. Middle flat 3 m. vegetation
not extensive - sand
gravel line.
- w. Middle flat 3 m. vegetation
not extensive - sand
gravel line.

Very pale, yellowish.

Front wings and body pale yellow, almost white,
the rest of the body
dark brown.

Ventral surface yellowish,
brownish-yellow below,
brownish above. Wings
yellowish, brownish,
brownish-yellow below.
Wings brownish-yellow,
brownish-yellow below,
brownish-yellow above.
Wings brownish-yellow,
brownish-yellow below,
brownish-yellow above.
Wings brownish-yellow,
brownish-yellow below,
brownish-yellow above.

Patted spiders from walls
of man caves.

Musca from elephant's skin.

Very pale, yellowish.

24749 *silvatica* Gilman
at top of marsh, Laramie.

Very pale, yellowish.
Front wings and body
yellowish, brownish,
brownish-yellow below.

Very pale, yellowish.

Front wings and body
yellowish, brownish,
brownish-yellow below.

Front wings and body
yellowish, brownish,
brownish-yellow below.
Front wings and body
yellowish, brownish,
brownish-yellow below.

Ventral surface yellowish,
brownish-yellow below,
brownish-yellow above.
Wings yellowish,
brownish-yellow below,
brownish-yellow above.
Wings yellowish,
brownish-yellow below,
brownish-yellow above.
Wings yellowish,
brownish-yellow below,
brownish-yellow above.

Stable walls - in fact.

area, a *Coccoloba* (salt)

soil salt and dry the salt
is probably washed. The
central part is the com-
monest place station except
for the stony sand.

The soil is thin and dry
and is very easily washed
out and is in a
single sheet and winds.

The greatest continuity
of *Coccoloba* is worked
out in of *Paspalum* -
large tufts, forming a
closed canopy above.
Rocky barrens do not
persist, e. g. small
tufts covered with
Eriophyllum, little or
no *Coccoloba* remaining beneath.
This is an area where it is
possible to walk the
Paspalum and easily drop
out, except along the head
and talus areas becomes
abundant, in places
forming patches of pure
Coccoloba stand. Everywhere
under the talus areas is a
solid stand of its seedlings.
On the seaward side,

the soil is not so dry
but it is low
and is worked out
from a dry to a wet bed
soil - a single sheet
lengthwise.

Partly recent glacial
a deep soil off-shore, in
upland, upwind, and poor in
gravel, stones. The
ground is by 7 feet
laterally, but does not
wash well, but changes in
water content - thin of pasture
that dries up in relatively
abundance). On slopes
and ridges it is broken
or a cold or trap filled with
a layer of broken
up talus, and then later
to a thin ground cover
mostly various woods.

In sand the ridge toward
the sea may have been
formed during dry years.
Now largely thin mats
of *Medicago* and *Agrostis*.

On the west end the
soil is flat, 1-5 m. tall,
is dominated by *Agrostis*
mixed - scarcely with
Grindelia and *Morongia*,
scattered locally with *Carex*.

in the afternoon
and after the
meeting I had dinner
with some old men
and the General
of the Army.

On the way to Bally-
Beg I stopped at the
Ballaghaderreen Hotel
at the top of the pass
and took a walk in
the country of the old
Irish Kings.

Along the main and smaller
tributaries of the river -
the most common plants are
various species of *Salvinia*,
Lemna, *Hydrocharis*, *Eichornia*,
Potamogeton, *Myriophyllum*,
and *Ceratophyllum*. The
bottoms are covered with a
mass of rank, moist, *Cladonia*,
absolutely crowded, of the
several small shrubs or clumps
of *Acacia* and ~~small~~
trees along the middle
of the west bank.

At about 4:30 in this day,
already old but also very
handsome was a small Apenni-

Laurel 152a - seed first
after break.
also streaks with
and wavy lines.

Aug 26 - Between 1st & 2nd

Vial 176 - small brown insects - tetragonid caught flying in sun - a few small ants on dry gravel, in quantity a few smaller ants and spiders, mostly larger ones, flying on open ground black, small ants & pseudoscorpions (possibly pseudoscorpions) small spiders - 2 or 3 ants larvae - 2 silt, 2 dirt & in root crown of Tetragonia bluish when shot.

Vial 177 - miscellaneous animals caught associated with Leucosia frutescens.

Vial 178 - 2 pastures and nest with young in rolled bear skin back.

Vial 179 - 2nd pasture - round hole in top nest - hole made by ants? - young full, emerging. Not associated with it.

West and somewhat to east of grassy hollow - 2nd, no manured almost completely by sparse belt of *Morone schreibersii*, locally mixed with *Leucosia*.

Along the south, part of the shallow indentation bordering west part mostly of *Morone schreibersii* and *Leucosia* practically absent. Southward along the west side it is narrow and the annual edge is faint at first, at the edge to the *Morone schreibersii* it becomes more prominent, especially near the center, and gradually disappears, becoming more and more faintly defined, and finally at the edge left unoccupied by *Morone schreibersii*.

Meadow-sweet nest is wider in places close enough to be called scrub forest.

Polygonum common in openings and among grass, leafy, also herbaceous. East side *Morone schreibersii* and *Leucosia* belt narrow, sparse with some *Lepturus* and yellowish

Pineapple is planted
at mouth, and on
eastern foot of range,
scattered ground
bases of ^{and} ~~bamboo~~
and trees at top.
A few seedlings at base of
the west bank of the
Pisac, east of the mouth
of oil, is an open valley
left over by a small
part of the north end of
the Pisac is a small
patch of coconuts with
a few trees of breadfruit.
At this time the mouth
is eastern foot sand
affected by wave
trouble that causes an
eroding of ground where
the green plants touch
soil. The field south
of the ground are normal
as it is probably the
result of the severe
dry season just past.

The upper sand the
surface is just slightly
gravelly and uneven.
Disturbed at least when
damp from a shower, it
is faintly gravelly.

Along the river, under
of the great bulk of
the growth, is a
mass of a great
of broken stumps
and driftwood
in a kind of a
swampy bottom
The water is
about six or eight inches
deep, and it is composed
of a thick mud
and broken stumps
at a distance of two
or three feet from
the surface.

On the south end
is an extensive area
of flat land containing
one-half to one-third a mile
by a mile, bounded by
a high range of moun-
tains on the north
and a range of moun-
tains on the south
extending about
one-half a mile across
the valley, and
more than half a mile
long, and about one
third of a mile wide
and extending
along the river, under
the great bulk of
the growth, is a
mass of a great
of broken stumps
and driftwood
in a kind of a
swampy bottom
The water is
about six or eight inches
deep, and it is composed
of a thick mud
and broken stumps
at a distance of two
or three feet from
the surface.

The Tetrapeltis
plataea of the sea grass
area, to the ~~edge~~ edge
of the disturbance due
to the dredging boat, to
the reef ledge.

In the early morning
we combed the reef
edge at least up to the
tortoise camp, where we got
several small ones to
the point. One was nearly
fully grown, nose to tail
and not much at under
one foot, was able to move
on land with a small
man's st. block. We
accidentally landed
back to sea, climbing
over rough, pitted
rock-segments, with
some difficulty, but
successfully. When
caught it weighed
slid easily.

Then, in probably the
night, the winds were
so gentle that same
as above. The sandy
area outside of reef
especially in the
Mareca schmidii belt
are thickly spotted
with shallow pits.

Today we combed
the reef area and
reached some of the
eggs. This is an
important finding in
connection with our
earlier work.

At least two of the
eggs were open and
the large tortoise in them
was all glide, beginning
in movements about
ten minutes (11), and in
one case, having eaten
early before 10 a.m.,
a column of bubbles
bottomed out by
water. The bubbles
were however made
by bubbles of air
and probably from
openings to the digestive
tract. A few bubbles
were seen at mid-morning
(Aug. 2) swimming toward
the sea. (P. 11). They
were being attacked
by large red crabs
which were in water
so bottom sand
bit through the carapace
of the rats through the
plastron.

see p. 149. *146

Bikar, May 1st

Very small drift
material still with
the tide to the boat &
abundant at anchor.
Few fish from the drift
material - the most
common were small
drifted eels found
in small pools left by
the tide. Several
and several hundred
fish were taken off
the sand.

Small - the main
material was drift
material, mostly all
broken shells, broken
fragments of broken
shells, driftwood, etc.
Large - driftwood
mostly broken, and
broken shells, broken
shells, driftwood, etc.

May 2 - The tide
was low and the
boat had to go to
the beach to get the
samples. A small drift
material. Very few small
fish in small pools & shells
of the smooth mud shell
and tiny shells too small to fit
in other kinds of shells.

Rat was common,
several seen at the
place of landing.

May 3 - small drift
material from under towels
brought up from sand bars
structures in mud shell and
an element of drift material
including the smooth mud shell.
Coral was found in broken
shells from a sand bar
head or reef flat. 29 pieces.
2 rats from around car &
water from sand above
high tide. Bikar, May 3.

May 4 - ghost crab - Almeni Islet.
stone crab from
beach rocks in passage
between Almeni & Palau Islets.

Aug 1 - 1958, S. W.

Caulerpa peltata variegata (det. Taylor 1955)on its regular white or green
bottomed leafy tufts.

found in 2-3 ft. of water

57 *Cladophora* (var. *virginica*?) green, yellowish green, and brownish red
commonest at 2-3 ft. depth.
bottom of the drift
bottom

bottom of drift on 2-3 ft. bottom

58 *Holotrichia undosa* A. and E. S. Appleby (det. Taylor 1955)59 *Tigrigloea okamurae* Setch. (det. Taylor 1955) green, yellowish
green, and brown60 *Haliplanda*
in cavities in upper surfacedark green to yellow-green,
yellowish to tan
at surface61 *Peronix*
on *Misodictyon*

brown, yellow

62 *Lisogorgia*
yellowish green, green

yellow, green

63 *Enteromorpha serrulata* (Forssk.) J.-R. & (det. Taylor 1955) green
in cavities in upper
surface of rocksurface of rock, flat bottom
at outer edge of reef64 *Neomuria vanbosseae* Lowe (det. Taylor 1955)
on surface

green, yellow, tan

65 *Microdictyon okamurae* Setch. (det. Taylor 1955) green, cream, yellow
tufts in crevices and
irregularitiesbrownish somewhat by
exposure to sand and spray

4520 yellowish
brownish tan - sample

4. 1) *Coccolithus serulate* (Forssk.) J. Ag. (det. Taylor 1955) green. Fills of bottom.
yellowish tan - sample

2. 1) tan in winter.

3) *Bingongia ceranoides* Lamx. (det. Taylor 1955)
abundant in May -

5. 4) *Polydora* sand -
abundant in winter
and on edge of reef.

Aug. 7 - 1952

Plane's first encounter

6. 1) *Amphipoda* - large

7. 1) *Amphipoda* - large

Sample 153 - probably the
poorest forest - tan
tan & brownish grey,
double layer of fine brown
sand with top layer
smooth & thin - smooth
bottom layer - very dark
brown - about 27%

8. 1) consolidated layer - 1" brown
and pale yellowish

9. 1) sample 154 -
loose sand layer 1 1/2" or more
light brown - sample 155 from

10. 1) tan to grey
greyish tan, tan -
at surface of sand,

yellowish brown, reddish
pinkish tan, grey

black

Sample 154 - tan to brown
that became darker after
cleaning out - for top of
Amanoopsis - bivalve
bore, mostly buried, very
consolidated by cement with
roots - not easily bent
vertically.

Sample 155 - phosphate
bed - tan, old, layer 1 1/2" thick
pushed up by *Pisonia* roots
so top 1 1/2" exposed to air.

Aug. 9 1954

Vial 3 - base of tree
Ground surface
soil layer 1-10 cm.

Soil

Vial 3 - Collected below
the ground surface. Tree is
dead. Occupying a field
of loam.
Soil surface and soil
are also dead. ~~Soil~~
Soil surface
is composed of sand
and silt. No organic
material found.

Vafe 4-15
Another vafe of the same
soil but slightly
more organic material
in light.

Aug. 9 1954, wet
Soil of organic material

sample is a white or yellow
loamy stuff of twigs
and dried leaves,
stained somewhat
with green.

Layer 1 - very dark
brown flat - 7". sample 5-
12 meg tests pH 4.5-2, 5-3, 5.5-1, 6-2
Layer 2 - ~~dark~~ consolidated
sand with darker brown
cement "band form" 1"

sample 5-2
12 meg tests pH 7-2, 8-6 + 10, pH 8
Layer 3 - gray-brown sand
with darker and irregular
reddish streaks stained
dark brown 5" sample 11-2

Layer 4 - darker gray brown
sand, loose filled with
roots scattered irregular
consolidated layers of
brown sand brown material
from stains on surface
of sand and in also the
consolidated material 7"
sample 5-3

Layer 5 - pale gray loose
sand with brown bands

On the first sand bar
about 100' from the water
there was a small
yellowish brown rock -
In the upper part
a large number of
shells were scattered
about - mostly
broken fragments of
the shells.

17
Aug. 24th Sample No. 1
of yellow sand

Large white sand bars
with fragments of
shells scattered about
brown sand with
large white shells.

Below this is a 4 foot
series of thin beds, the
bottom most of sand
is a yellow sand with
large white shells.
just above the sand there
is a layer of fine sand
and above this a thin
layer of yellow sand
with sand sample 136-19
rock 136-19 gravel - sample 136-19

The first sand bar
from sand bottom
was
about 100' from
the water with
very short distance.

Second sand bar
about 100' above the
water.

Cloudy with
moderate trade
wind. Wet bulb 71°
dry bulb 67° day 78° F.

11:30 a.m. scattered cumulus
clouds. Light winds
dry bulb 71° day 78° F.
wet bulb 67° day 78° F.

12:15 p.m. clear sun - no
clouds. Light winds
dry bulb 74° day 81° F.
wet bulb 69° day 79° F.

Cloudy with
9:30 p.m. light winds
dry bulb 74° day 81° F.
wet bulb 69° day 79° F.

Cloudy with
6:30 a.m. scattered small
cumulus clouds. Light
to moderate trade wind
wet bulb 75.8° day 80.8° F.

9:30 a.m. Scattered cumulus
clouds. Light winds dry
wet bulb 77° day 80.8° F.

Cloudy

11:30 a.m. scattered cumulus
clouds. Light winds
wet bulb 71° day 78° F.

(Wet bulb 71° day 78° F.)
wet bulb 71° day 78° F.

after 4 minutes precipitation
light fog. Dry bulb
wet bulb 71° day 78° F.

Cloudy

11:30 a.m. scattered cumulus
clouds. Light winds
wet bulb 71° day 78° F.

12:15 p.m. scattered
cumulus clouds. Light
winds. Dry bulb
wet bulb 74° day 81° F.
wet bulb 71° day 78° F.

Cloudy with
wet bulb 71° day 78° F.

Fresh air frost at 2
in. on portable

9:30 a.m. ~~Scattered~~ cumulus
clouds. Light winds
wet bulb 71° day 78° F.
dry bulb 69° day 78° F.
wet bulb 71° day 78° F.

126 No. 156 - Bitter staff

Aug. 2 - Bitter staff

Clam shell forest

Sample 157 - Peat ^{dark} stained with green
and concretions visible
from beneath into the
bag. This is from
near the east end
of the island.

Sample 158 - Peat 3-4" with
spared roots at base
of large *Limonia*. 158-1
ppm - 17 Traces of
Hg

4.7 - 3
7 - 7
5.7 - 1
6 - 2
6.5 - 5

green & stains Hg tests
all ppm

Fragments of wood found
in the soil of peat ~~forest~~
occasionally powdered and
left in water from below
sample 157-2
from same country
as Island

127

sample 157 - L. sub
Pisonia tree trunk edge

Sample No. 1 yellow
decaying tree up hill
off the road, no analysis

Aug. 2 Bilean et al.

1. 67 *Peltaria heterod. sp.*
in forest grove, west
end of hill, 2000'.

2. 68 *Pandanus tectorius* Linn.
in forest grove at edge
of Pisonia forest.

3. 69 *Pisonia grandis* R. Br.
in edge of Pisonia forest -
in front of one pine stand.

4. 70 *Peltaria heterod. sp.*
common on flats at edge
of forest on south side of hill.

5. 71 *Lophozia apiculata*
common on sand edges
of forest in open places.

6. 72 *Gibbaeum diffusum*
common in dry sandy soil
at edge of forest, especially
on west side of hill.

Stems numerous, 1-2 m.
tall, erect, branching,
yellowish green, smooth,
fleshy and angular.
Leaves 20-30
spreading rounded tips
long slender, 3-4 mm. thick
pink from ground beneath.
The young & old in tropics
are all

Tree 2 m. tall, trunk slightly
bent over so as to touch
soil (not more than 1 m. thick).
Stems, tree twigs, leaves
long narrow, slender, small,
greenish yellow from
ground beneath the
plants, spreading,
almost prostrate to ascending,
less fleshy, stems and
leaves green, pointed —
all eaten out by insects.
Twigs all eaten so tender
no skeleton remain.

prostrate, forming large
mat from thick root system;
stems red; 2-3 mm.
dull green velvety beneath
fleshy and fleshy in
morning, dried in afternoon,
fruit shrivelled.

Specimen 746 - *Scamandria heteroptera*
common in open flat
in south end of hill.

Specimen 747 - *Mesoleptus neglectus* Wm.
common in open flat
in south end of hill
one specimen found in
flat at top of hill.

Specimen 748 - *Ammodramus savannarum* Fins.
common in open flat
in several at top of hill.

Vial 182 - gecko found
nearby, possibly in an
old saddle track.

Vial 183 - lizard found
dead on ground.

Vial 184 - *Plecoa* found on
ground in Pine in front

Vial 185 - *Crotaphytus*
found on ground in
Piney flat.

Perhaps 186 - mostly caught
flying in Piney flat.

To the westward
water runs on flat
in south end of hill.

ponded locally in small
depressions in hill
bottom in Piney flat
about 800 ft. above sea level.

Geckos, etc., found
in old saddle tracks.

Aug. 1 - Bahia Foothills
low gravel bar -
not more than a foot
in thickness high tide
level. Rock flat &
smooth.
The part of bar above
high tide is a patch
of *Littoralis* *littoralis*
fairly dominant.
There is a colony of
thousands of *Sooty*
gulls. On 1 side of
eggs and thousands
of recently hatched
chicks just gathering
at all yet - alive.
Many of them dead.

Very little sand &
gravel. Light gray
stain, in spots, in
light crevices in
surface of sand
(sampled) of sand
cemented with fine
sand. Sampled from surface
4 inches of sand on
rocks, not where
there is no sand.

It has rather wide but
not especially broad
sharp ridges from
windward w/ irregular

Aug. 1 - Bahia Foothills
Please see next
page.
Sample No. 1 - *Littoralis*
Rocky low flat where
tide is rising waterless,
gravel - stones - large
Sample 163-1
Layer - cemented
calcareous, at least 2" in
thickness. Sample 163-2.

Sample 164-1 - *Littoralis*
Layer - very pale brown
peat 5' thick.
Sample 164-1

Layer - cemented
calcareous
Sample 164-2

Layer 164-3 - coarse pale
brown sand 4" -
Sample 164-3.

Vial 136 - Animals from
under rotting *Pisonia*
wood in great live trees
for 1. Animals, except
insects, very scarce.

Aug. 9 - Dredge up about
fifteen feet of
material.

Sample 165 - 1' of
layer 1 - soft tan brown
soil, somewhat
yellowish streaked
by sulphur.

Layer 2 - hard pan of
lime that would not
get through more than
1/2 inch diameter.

Sample 166 - 1' of soil
layer - soft 3" thick
soil with green stained
tangles in it.

Layer 2 - hardpan 7" thick
tangle w/ ~~lime~~ rock
sampled lower part

Layer 3 lower part
sand and rubble 6"
sampled in.

Sample 167 - grains
just from side of
Bacca forest under
sand, limes, frigate bird
and boobies roost.

Vid 177 - 30' to sea
- 5' to the top fine
grain gravelly.
Brown sand with
lime, green or a
yellowish bottom.
Relatively hard at some
places, getting more and more
loose, sandy, gravelly
gravelly.

Sample 168 - grains
from just back to the lot.

Sample 169, 170, 171 - parts
of the gravelly
Bacca lot.

Sample 172 - light
soil like at lot

Aug. 4 - Sat. Aug. 5, 1955

34517 *Ptilothrix* - common (Fav. sp. m.) abundant, by water in mangrove forest, sand and silty bottom at edge of beach.

34518 *Ptilothrix*
abundant on sand and
bottom on soft substrate
in ~~water~~ on lower side of ridge,
at ~~edge~~ edge of ridge

34519 *Ptilothrix* (det. Taylor)
common on sand at beach

34520 *Ptilothrix* on sand

34521 *Ptilothrix* on sand

34522 *Ptilothrix* in interstices of *Ptilothrix*, etc.

34523 *Valonia* (fragments) (det. Taylor 1955)
in interstices of brownish
sponge or soft coral

34524 *Ulotrichia indica* A. and E. (det. Taylor 1955)
in interstices of brownish
sponge or soft coral

34525 *Caulerpa wrightiana* Mont. (det. Taylor 1955)
in holes in coral

34526 *Microdictyon okamurae* Seta. (det. Taylor) 1955 green, flame colored
in holes, crevices, etc.
in coral

34527 *Halimeda*
on outer side of ~~ridge~~
ridge exposed to waves.

Tideline, mostly stems

tideline, plant stems
spreading branching
blades yellow, 1-2 cm.
blades petiole emergent,
petioles 3-5 mm.

34528 *Gracilaria*

in interstices of sand
etc.

reddish dark green to

green color to etc., fragr.

greenish yellow

green

34529 *Microdictyon* green, flame colored
1955

compact tuft

Sample 173 - 10' of soil

Sample 172 - 10' of soil
of brownish-yellow
loam - no plants.

Sample 174 - 10' of soil
east side of valley,
islet in Pinus forest.
Layer - drift of leaves
and twigs, 1" thick,
spattered with fine
brownish pebbles
most of them about
1/2" to 1" long.

Sample 175 - 10' of soil
soil 2" bent, last layer
to this 10' 1/2" thick
pH - 8 tests, 3 of them 10° & 7
others 4.0. Tracey

Sample 176 - 10'

Layer 3 - hard pan
quite hard 1" thick
brown with no plants
spattered with stones -
Sample 177 - 10'

Layer 4 - loose soil
yellow brown sand
10" thick, sample 178 - 10'

sample 179 - 10' of soil
of water from cavities
in spreading base
of Pinus tree in
Pinus forest - bottom
from separate pools
may have slightly
different soil water &
in bottle 179 a from
pool by itself or
soil at seepage
bottom layer had
green mud to catch
water. 175 & 176
soil is mixed with a
fractional amount of
water 179 a had
numerous stones
in it. (Vial 188)

Vial 187 - 10' of soil
under dead sticks and
stones in base of Pinus
forest. Bottom layer
running around on ground
drilled into on rotten
Pinus tree with loose bark.
Capped under stone.

140 1952 African Atoll

Aug. 10 - 11 - 12 - 13 - 14 - 15 - 16 - 17 - 18 - 19 - 20 - 21 - 22 - 23 - 24 - 25 - 26 - 27 - 28 - 29 - 30 - 31 - 32 - 33 - 34 - 35 - 36 - 37 - 38 - 39 - 40 - 41 - 42 - 43 - 44 - 45 - 46 - 47 - 48 - 49 - 50 - 51 - 52 - 53 - 54 - 55 - 56 - 57 - 58 - 59 - 60 - 61 - 62 - 63 - 64 - 65 - 66 - 67 - 68 - 69 - 70 - 71 - 72 - 73 - 74 - 75 - 76 - 77 - 78 - 79 - 80 - 81 - 82 - 83 - 84 - 85 - 86 - 87 - 88 - 89 - 90 - 91 - 92 - 93 - 94 - 95 - 96 - 97 - 98 - 99 - 100 - 101 - 102 - 103 - 104 - 105 - 106 - 107 - 108 - 109 - 110 - 111 - 112 - 113 - 114 - 115 - 116 - 117 - 118 - 119 - 120 - 121 - 122 - 123 - 124 - 125 - 126 - 127 - 128 - 129 - 130 - 131 - 132 - 133 - 134 - 135 - 136 - 137 - 138 - 139 - 140 - 141 - 142 - 143 - 144 - 145 - 146 - 147 - 148 - 149 - 150 - 151 - 152 - 153 - 154 - 155 - 156 - 157 - 158 - 159 - 160 - 161 - 162 - 163 - 164 - 165 - 166 - 167 - 168 - 169 - 170 - 171 - 172 - 173 - 174 - 175 - 176 - 177 - 178 - 179 - 180 - 181 - 182 - 183 - 184 - 185 - 186 - 187 - 188 - 189 - 190 - 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993 - 994 - 995 - 996 - 997 - 998 - 999 - 999 - 1000

141

Vial 176 - insects captured from under stones in
forest floor. Insects & spiders
from sandy beach.

Vial 177 - Insects and spiders
caught in Leucosia forest
insects on open
ground flat. Termites
flying.
Paper 17 moth caught
Leucosia forest.

Paper 18, 19, 20 moths caught
around lights. Paper 18
Aug. 7, 1922.

Vial 178 - Insects caught
sweeping Reptiles, reptiles
caught on bark of Picaria
stems little flying.

Vial 179 - Tettigoniids caught
around camp. Other
insects caught on Messerschmidia
schmidii. Aug. 12. 1922.

Vial 179 - insects from
hole in broken off Picaria
tree - about 10 gallons
of water with decaying
leaves and mud. Was all
drowned in water.

Vial 180 - insects from
Picaria forest - about 10
gallons of water.

90. *Cladophora* sp. - green
- branched, - 1 m. long
- surface with

91. *Phaeophita* sp. - brownish green
- branched, - 1 m. long
- surface with

92. *Cladophora* sp. - green
- branched, - 1 m. long
- surface with
- surface with

93. *Cladophora* sp. - green
- branched, - 1 m. long
- surface with

94. *Graenvillea nigricans* Duce. (det Taylor 1955)
- dark green, - 1 m. long
- branched, - 1 m. long

95. *Udotea* sp. (det Taylor 1955)
- spigot yellow, - 1 m. long
- branched, - 1 m. long

96. *Valonia? utricularia* C. Ag. (det Taylor 1955)
- spigot yellow, - 1 m. long
- branched, - 1 m. long

97. *Lyngbya* sp. -

98. *Porolithon* sp. -

purple

green

green

green

dark green,
brownish green

dark green

dark green

small tufts, pink

- fragile

small rounded knobs,
pink.

144 1950 October 10th

1950 Oct 10, 1950 (Muscat) rock
in sandstone

to

Polyciphona (det. Taylor 1955)

Poly-
ciphona
in sandstone

etc.

145

specimens

specimens

Aug. 1

Woke early & went
out with a boat
to search for the
former bridge.
Boat was about 12
ft. long & 3 ft. wide
on the front was a
tree branch fastened
bearing seawards.
The sprouts may be
dead or filled with
water & sprouts. The
rest of the front is a small
tree broken down & set
up so together, one end
is on the left, the other
on the right, & the
branch of the tree
with the dead growth
of root sprouts.

Canopy is thick because
there are small trees.
On the west side of
a ridge from which
slope off to the
right of the way & side
of the west side
is 2 ft. high about 15 m.
width of the ridge
about a little over
and by a slight cut
in ditch lies a boulder
laid by a strong man
at the edge and in two

the ridge about 20 ft. in
to the west of the
ridge a small
pocket is situated along
along the entire west
edge to a narrow strip of
movement (#7).

On the west side sand
has washed in, covering
the front & back part
with a foot or two of sand
laying on top of this
a thin layer of green
plant has been laid
down of a relatively
large diameter, and
the surface has
subjected to a large
deposition of it in banks
has formed or is forming.

When the cage tipped
over the roots have
often forced themselves
of sand granules to the
surface - one place
above a an exposure
there a ledge several
m. long and 6 m. thick
of sand and boulders
(sample 176). In other
places normal growth
of roots has forced
boulders to bear to the
surface.

Aug. 10, 1933
Tibet, Tibet
1933
Long sand-colored bird
with (sample 177-1) all
brown with white wing
bars, small white spots
on the wings, with
thin deposit of yellow
on the greater coverts
and underparts of the
breast, orange-yellow
in color, sample 177-2,
sample 177-3.

In view of the orange-yellow
color on the head and
breast, so far described.
This bird and others from
the same locality
sample 177-4,

or

long sand-colored
bird with white wing
bars, small white spots
on the wings, with
thin deposit of yellow
on the greater coverts
and underparts of the
breast, orange-yellow

48° 50'

46° 37'

On Aug. 10 watched one
in marshes at about 3,100 m.
The bird was very pale,
almost white, and birds
of this day do not have the
strong contrasting marks
and blackish shoulder
marking, but the
shoulder feathers
are dark, and the wing
marks are very faint,
marked and sweeping rather
widely, with only faint, easily
seen markings, and in any
case the foot does not
have the pale brown
markings, and the wing
markings are rather
faint, and the tail
feathers are brownish. Eggs
are whitish and somewhat
irregularly dropping into the
holes. There are solid eggs.

in our boat. Went to
the south end of the atoll -
about 1/2 mile from the
center of the atoll.
The water was
calm and all the coral
is broken. The sand
is very fine and
there is a great
amount of broken coral
and shells on the bottom.

Spent the day
on the reef and went
out to the south end
of the atoll. The water
was very rough and
we had to go back
to the reef. The water
was very rough and
we had to go back
to the reef.

Spent the night on the
reef and went to the
south end of the atoll
in the morning. The water
was very rough and
we had to go back
to the reef.

Almost all of the
water was calm on
Man Atoll. We set 7
traps and a single
one was noted on January 1.
A bird on the south
part of the atoll.
There is a large
area of shallow
water in the center
and near the bottom
sand.

Bilkar Jetty - Largest inlet elliptic in shape with a prolongation to south and one to north. South projection is mostly bare rock. North projection is a gravel flat with a low sand ridge along the west side. This low sand ridge becomes much higher along the west side of the Pisonia forest to west, and curves around to the south and west sides. In places, especially about opposite the southernmost part of the coast, wave action is cutting into this sand ridge. Here a series of buried sheet-like coal profiles are exposed the top one about 15' below the surface of the sand bed, second being a foot below it at the gray iron layer. An slightly more compact than the lower fine sand and the color gradually fades downward in that of the unaltered sand.

The jetty ground is composed of coarse sand, fine sand, and some gravel. The sand is composed of fine particles with little or no iron. It is rather uniform in size and has rounded tabular grains. Most of the Pisonia pebbles are post-weathered by the Mo Mo phosphate, hardpan. This however is greatly modified by deposition of many fine particles of leached, weathered, broken or ground to sand. From the sand and gravel come small pieces of other sandstone and caliche iron and in the surface. Small white veins of coal are at rock surface or elsewhere and slabs of hardpan, pumice, pumicite, broken beds supporting bird's nests, or by roots of Pisonia trees, capped by stones.

The action of the sand

so fine sand - all the
soil is yellowish and
partly pebbled with
sand & fine gravel.
The bottom soil is
yellowish brown clay
intermixed with sand &
pebbles. It goes to the
main soil & has a thin
yellow layer of sand
topping. This contains
4.0 white yellow sand &
green bent. It is 5.0.

The ground starts like
a thin layer of soil &
is yellowish pebbled and
yellowish brownish
if somewhat consolidated
or granular. The fine
sand granules are mixed with
the several brownish
ones. In a well-developed
hardpan layer, one
can see scattered, but
quite firm, some
lignite thick about
2-3' below the surface.
The colored peat has
disappeared from this
part. The top is of a
dark-colored earth material
(Profile 15-1)

Toward the east side
the deposition has been

higher - and at the
edge there is a first
layer of black sand
consolidated and decom-
posing weathered thick.
This we can ignore & look
at the following layer
which is all dark brown
soil & granular & has
the appearance of a
toward the south, in
these sections. The darker
soil granular are
more generally exposed
than above. This is not
solid where the soil is
brown & appears
to stand the base of the
clay in the upper portion
of the profile.

Opposite - 1 - Mi

1. About half a mile back of the village, opposite and about 1/2 of the way up the beach, is a solid bank of fine sand.

On the top of this, with a few palm trees, there is a flat area of sand about 100 ft. long and a few inches high. It is covered with grass and a few small plants. A path leads across it to the beach.

Opposite this, about 1/2 of the way up the beach, is another flat area of sand. This one is much larger, about 100 ft. wide and 10 ft. high. It is covered with a dense growth of low-lying plants, mostly grasses and some small shrubs.

On the beach and the lower slopes of the hill, *Pisonia* comes right down to the beach in some places, with here and there coconut trees. In other places there are open plots, with a sandy soil, *Baccharis* and a few tufts of *Lippia*, a few *Messerschmidia*.

Opposite is a low-lying area about 1/2 a mile long. Two coconut trees line the opening. On the south, parallel to the beach, is another bare gravel bar. Messerschmidia, some *Lippia*, some *Baccharis*, very little *Pritchardia*.

On the seaward side of the beach, in sandbars, there is a strip of *Pisonia*, *schiedeana* or *pumila*, of *Pisonia* has a much thicker, more solid trunk than *Pritchardia*. *Baccharis* and *Lippia* are also found, and great patches of *Grindelia*. No *Pritchardia* is found for a stretch of 1/2 a mile along the seaward side.

The seaward of this is an extensive flat of rock, scattered over high tide line, with very thin, sporadically deposited gravel soil. This is a bed of *Pritchardia* and *Pritchardia* is rather mostly dead.

This suggests the inlet extends for some

limestone as a way of
good gravel beach. On
the seaward side there
is little chance to do so
but the old, flat, and
soft limestone.

The first horizon from
the lagom is a strip
of very fine sand which
descends to, with the
exception between the
years and a change to
hard limestone.

For the coarse there is
first a green alluvial deposit
of peat 1-2' deep, rather
loose with very well-
separated hard green
in more thick. No evidence
of much weathering of
sand in it.

Opposite the first ridge
between the old beach
and the Cibet, I saw
a prominent section of
old lagom and high
beachrock beds. In it
a corresponding series
dipping seawards about
15° m. out, less complete
than the lagom and
with which has a few breaks

a small growth of
Cordia of damage from
the sand which is
about 10 ft. off the

talibetite point - also
covered in rotted peat
by pieces, but here
most of the Cissia
forest is about 10 m. high.
The windward end
strength "windbreak",
just like tree peat
there are trees up to
10 m. high, and 15 m. tall,
but not many of large
size while growth
except ~~occasional~~
~~fallen~~ forest species.
~~fallen~~ ~~fallen~~ 2-3 m.
tall at the parts completely
bare. The seaward stem
is quite rocky
able to be made
into a lot of pieces
blanketed with 1-2'
so of fast, but often
minutely undulating
it.

Along the entire
ridge of beach on a
whole ridge beyond
is a high, steep
the converted to the later.

about 100' above sea level, the beach is very well built. Bedrock is low and there is a thin layer of sand, the beach is ~~dry~~ from the early afternoon to the next morning. On the Pisonia side of the beach, the coastal vegetation is the same as on the west complete to the point with a few almost dead *Messerschmidia* and some bushes sprouting from base, a few seedlings, a small patch of *Hipteris* and a few plants of *Pritchardia*.

To wind to southwest, north end coast there is a short beach is good and there is almost no *Messerschmidia*, it is a narrow irregular, like strip of seepage with some *Pritchardia* and *Pandanus*.

Toward the northeast end this strip gets wider and a belt of *Messerschmidia* appears

crossing fairly wide, to the end, *Messerschmidia* ridge looks forward to the island and *Pritchardia* and *Pandanus* with *Acacia* *Heliotropium* like between them *Messerschmidia*.

Along the eastern side and extending down to the mouth of the inlet is an irregular, low flat with little soil. Some *Pritchardia* a little *Pitcairnia* you know the highest areas of this.

• Gravel bar just to west of *Messerschmidia* a very long, no vegetation at all, one other member of family on the western side.

large shell
on bay with
steep bank

In part very sandy
yellowish, fine
grained sand
with some
fine shell fragments

Mesozoic rocks
mostly flat and
abundant along
the coast

Rocks sandy
abundant in
water bank may
be sandstone, traces
of iron pyrite
abundant
possibly

These may be
part of the
bank may be
not near the sea

Large shell
buried under
sand present to
be well scattered
everywhere and
to be found near
birds etc. in sand

Practically not
available probably
scattered. The remains
of a marine structure and
fragments

in on an island in
marshy forest, scattered
with grains about
as follows.

On wet flats in
central Philippines were
observed long broken
straight curved often
interlocking, irregularly
shaped due to solution
of top. It can suggest
possibility of change in
volume of the structure
or erosion of ~~the~~ calyx
quite possible to be right.

in India.

Spotted dove -
In the open fields
and pastures
near the villages
and towns.

Red breasted lark -
Very common in
the open fields
and pastures -
Takes its food
mostly on the
ground, eating
the insects which
it finds in the
grass, and
occasionally
flies for it.

Blue faced lark -
Very common in
the open fields
and pastures, the
soil being dry and
light, so that
it can easily
dig for insects
and other small
insects. It is
very fond of insects
and other small
insects, and
flies for them
mostly on the
ground, and
occasionally
flies for them
in the air.

Blue faced lark -
Very common in the open
fields and pastures,
but also in the
open fields and
pastures, and
occasionally in
the air.

Blue faced lark -
found in small numbers
especially on the open
side of hills, particularly
on the sides of
gravelly, sandy or
loamy ground, where
they are found in all
stages of development.
It flies low over the
ground, and alights
when disturbed, and
then flies away, also, when
alarmed. Very
common birds, especially
in the open fields and
pastures, and also
in the open fields and
pastures, where they
are found in great
numbers.

W. J. D. and T. C. - 200 ft. high
wooded slope - sandy soil
- 200 ft. above lake.

We are going toward
the coast. The birds
are getting more
of saltgrass and flats.
They are mostly
in lagoon and sand
bars near pasture
between and Palibeh.
A little with a
few salt specks. Red
leg nest with great
nesting no bent grass
or other 4-5 feet. Didn't
see any. Most only a few
feet of grass and very
little grass growing. Very
sparsely vegetated
especially as the bird is
sitting on it.

West off of Laysan

Island - 10 miles

Wet grassy plain

Sandy flats - 10 miles

Wet grassy plain -
Sandy flats - 10 milesWet grassy plain -
Sandy flats - 10 miles

Wandering tattler -

seen to time of four individuals

occasionally seen on

beaches and steep flats -

especially on seaward

sides of islets.

Golden plover - single

individuals, rarely

small flocks up to 7,

commonly seen on all

islets, especially around

edges on beaches and

Vidua beldam

in the high
parts of the
hills - 11,000 ft.

and up to 12,000 ft.
with no shrubs
but grass and
the asteraceae
predom. from
all these
there is a great
variety of plants
that I did not
know yet but
there are a few
of which I am
not quite sure of
what they are
at 11,000 ft.

There are now about
1000 ft. of elevation
from the plateau
to the hills.

We expect a sea
level in the state
from the average of
these.

Notes by Phillips said
that about 2000 ft. is
very common on the hills
in the plateau. That the
weather is somewhat
and that we probably
surpassed it in our
expedition because
we went down

1000 ft. so said that
it is less cold in the
mountain but more
cold than sweet potato
and us for this reason
of course frost.

Vidua is a cockroaches
from which species
possibly introduced
in Pobral and Bilear
with equipment
and supplies taken
astore for surveying
property.

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173

Marshall Islands
Vol. I

Although the following
interesting ecological,
geological, and pedological
relationships in the
soils ~~series~~ be a subject
of the Two Series will
be discussed in some
detail elsewhere, it was
desirable to publish first
a description to establish
the nature of the series, as
is to be done to refer to
it conveniently later.
The present description
will stand, further, to
call attention of soil
scientists to what may
not ~~be~~ ^{be} in agreement with the
statements of related
series.

In various atolls
in the central Pacific soils
have been described
(Hutchinson 1917, 1920;
Catala 1924). These
are characterized by a
layer of organic matter
underlain by a profuse
hardpan which is, in
turn, underlain by loose

material in older
soils and, in addition,
soil descriptions, most
of which have been
done by rather casual
soil-hunters or are
unpublished so that
~~work~~ may be traced only
to 1917, in his monograph
on The Geomorphology of
Ventral Atoll Islands.
Moreover, the very descriptive
as this group up
will best give a
name, nor does its
characterization been
~~so far~~ defined.

The name chosen
here is from the island
of Fong in the northern
Marshalls, where
the writer was first
able to in 1917, to study
a well developed example
of such a soil. This
was during a resurvey
of certain of the
northern Marshall
Islands carried out
by a party from the U. S.
Geological Survey, working
under auspices of ~~and~~
~~in~~ the Engineers' Field
Command, U. S. Army. ~~in~~

brownish, tan, or
brownish-green.
- - - - -
Takes, like agates, lyses,
With a yellowish, ~~and~~
brownish, ~~and~~ white to the
black, intercalary bands
are common, & these
abut onto light-colored
bands, and in some cases
~~intercalary~~
fanning Rose, Bileen
and Butterita-i (?) are
in the central Pacific
islands. This is a very
stiff in the weathering. In
Oceania, references to Washington
Fernandez and Nagasaki
also in the central Pacific,
suggest that similar
material may occur there
~~also~~ too.

The essential feature
of the band series is the
isolation of an A horizon
of a dark brown to black
layer of fine angular
material, springy & brittle
partly in texture, with
the abraded material
leaving a red twigs, acting
as a layer of the original
recognition. It occurs
in all but one instance

and seems to be fundamental
to the origin of the
series. The ~~isolated~~
A horizon is often a part
of the bed, but it is
isolated by what a student
of the sedimentation
would call a thin
A layer, which is not
mixed with, nor
significantly modified
by calcareous sand
or gravel, p. 7 of my 4 to 6.
The Adolizy in some
cases lies directly on
an altered or weathered
matrix of calcareous
sand or gravel. More
commonly the upper
layers of sand and
gravel are cemented
by a stable lime
cement into hardpan
or stonewall, in the
example arranged
was very strongly
phosphatized. The
correlation between
the occurrence of
such a hardpan
and strong ground
staining on the surface

at stage.

The soil is sandy
and it is very
dry and hot down
in the surface but
the plants have
grown out well so
that there is no
drought here. The
soil is not good
but it has been
grown on for a long
time and it is
now quite good.
The plants have
grown well and
there is no water
problem here.

The soil is sandy
and it is very
dry and hot down
in the surface but
the plants have
grown out well so
that there is no
drought here. The
soil is not good
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soil is not good
but it has been
grown on for a long
time and it is
now quite good.
The plants have
grown well and
there is no water
problem here.

The soil is sandy
and it is very
dry and hot down
in the surface but
the plants have
grown out well so
that there is no
drought here.

the first I took
I found it to be
a very small
and rather pale
specimen, but
it was well
represented by a
large number of
smaller ones
which were
all of them
of a uniform
size and shape.
The first
I took I found
it to be rather
poorly represented
but I found
it to be a
large number of
smaller ones
which were
all of them
of a uniform
size and shape.
The first
I took I found
it to be rather
poorly represented
but I found
it to be a
large number of
smaller ones
which were
all of them
of a uniform
size and shape.

On Baltic coast
After the ^{above} took
a considerable day at sea
and by wind or wave

the first I took
I found it to be
a very small
and rather pale
specimen, but
it was well
represented by a
large number of
smaller ones
which were
all of them
of a uniform
size and shape.
The first
I took I found
it to be rather
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size and shape.
The first
I took I found
it to be rather
poorly represented
but I found
it to be a
large number of
smaller ones
which were
all of them
of a uniform
size and shape.

Aug. 11, 1897.

Occasionally seen in the city
about the following places:

- (1) On sandstone ledges;
- (2) On various cobble-stones;
- (3) In cracks

Indication of these species

was given by the author
and his party about half a
century ago.

The second author of the
species aff.

Pterosphaerula ciliata
luteola popularis

seen on sandstone
about the same time

as above.

Aug. 12 - Mailelele
Hawaiian Island

Mailelele - vegetation
over a plateau 500 ft.
localized, large areas
unplanted, bare or
red.
Now, in coastal areas
now going from 20° to 35°
apparently no erosion
except at $\frac{1}{2}$ of the way
up slopes, greatest loss
of soil due to the
~~lava~~
20-40° slopes, least on
5° and 8°.

Aug. 12 - Mailelele - right
by side of Honoluau.

Lava areas on plateau
are grassy with scattered shrubs.
Most of it is bare red dirt.
Many of the gentle slopes
are probably grassy.
The ravines have been
filled with sand by
runoff from their drainage
area which has been
washed away. Most
of the ~~slopes~~ with sides
is red.

at Maui - several
of the most recent
lava flows on the south
windward side of Mailelele, where
they reach the sea have
apparently no vegetation.
Others have a thin cover.
Lava slopes further
up have a sparse cover.
Few spots have a
good growth there
to be described.

On the slope of Mailelele
is a gully of lava
with a stream with very
sparse cover but in
most of the center of the
windward slope is a
large area of gentle
slope, its top at about
a 10° slope, the slope
then drops to 1° that above
becoming much steeper
and longer. The relatively
smooth slope is grassy.

Canai - There are still
large bare ~~area~~ earth
areas of the west windward plateau.
Much lava on west end.

Group of tall trees
and yellowish-green shrubs
in distance

18-10-09 On the way to Brack

It is a ~~thin~~ very slender
tender, fleshy grass.
It is covered with
a tassel of awns at the top.

abundant on tall, slender
and upright stems
Lepto low bushy, 2-
m. tall, slender, magenta
at top, m. tall, slender,

about 200 tall slender
spike grasses with
flowers red with green

Stems slender, 1-2 m. tall,
redish, pubescent, glaucous green,
blades red with green tips.
Stems 3 m. tall. blades
green, glaucous. Blader
purple with green tips.

slender about 1.4 m. tall.
Leaves bright green;
Flowers red with green stripes
according to what

The first track was made about 100 ft. off the entrance, so as to pass through a patch of tall grass. I did not have time to lay out the first line so as to be able to extend it to the entrance, so I took the compass and bearing from the entrance and set the line.

194

195

196

197

1571	323	184	- 16126
1572	323	185	- 160
1573	323	186	- 163
1574	323	187	- 164
1575	323	188	- 165
1576	323	189	- 166
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1579	323	192	- 169
1580	323	193	- 170
1581	323	194	- 171
1582	323	195	- 172
1583	323	196	- 173
1584	323	197	- 174
1585	323	198	- 175
1586	323	199	- 176
1587	323	200	- 177
1588	323	201	- 178
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198-200

Borders to gain

6 - f-8
17 42

Borders to gain

8 - f-1
7 12
6 1
5 1
4 1
3 1
2 1
1 1
13 1
12 1
11 1
10 1
9 1
8 1
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2 1
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19-20 1



